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Description

Dry skin is caused by an inadequate moisture content in the stratum corneum. The stratum corneum is a multicellular membrane of flattened, metabolically active cells which forms the outer layer of skin. The membrane is dynamic, constantly renewing itself as surface cells are lost through desquamation but replaced at an equivalent rate from underlying epidermal cells. This process maintains an essentially constant number of cell and a constant thickness in the stratum corneum.

The stratum corneum's water content must remain not less than approximately 10% to maintain normal skin hydration. At this moisture level, keratin (the horny skin layer) softens and attains a plastic state. This moisture level occurs in normal skin when the environment is at about 60% relative humidity. In the normal indoor environment, moisture content of the stratum corneum is about 10 to 15%. At 95% relative humidity, the stratum corneum's moisture content increases to about 65%. At low temperature and relative humidity, the outer skin layer dries out, becomes less flexible and may crack when flexed thereby increasing the rate of moisture loss.

Dry skin is characterized by one or more of the following: roughness or flaking; loss of flexibility; fissures; hyperkeratosis; inflammation and pruritus. While dry skin can occur at any season, it is especially prevalent in the winter and commonly found on the forearms, back of the hands, fingers and lower legs. Other causes of dry skin include disease, prolonged detergent use, malnutrition, age and physical damage to the stratum corneum.

Water is the only true plasticizer for human stratum corneum. The optimum treatment for dry skin is to raise the stratum corneum's moisture level and to reestablish its integrity. Approaches to treating dry skin include: lubricating the skin; moisturizing the skin; chemically softening the keratinous epidermal layer; treatment with anti-inflammatory medicinal compounds. A detailed discussion of the approaches for treating dry skin is contained in Handbook of Nonprescription Drugs, eighth edition, Copyright 1986, American Pharmaceutical Assoc., Washington, D.C., Chapter 30, pages 597 to 631, the entire contents of which are hereby incorporated by reference.

Moisture diffuses to the keratin layer about 50 to 100 times faster than it is lost from the skin surface. Human skin is an effective barrier against water loss. Physical damage increases transepidermal water loss.

One of the primary treatments of dry skin involves the use of occlusive agents. Occlusives are hydrophobic substances that promote water retention by forming a barrier on the skin that will prevent moisture loss. The most commonly used occlusive agents include petrolatum, lanolin, cocoa butter, mineral oil and silicones.

Occlusives alone are not considered sufficient treatment. Patients are generally directed to soak the effected area in water for 50 to 10 minutes and then immediately apply the occlusive agent. This treatment will hydrate and then trap moisture in the skin. It is also believed that occlusives reestablish the integrity of the stratum corneum. In addition, occlusion may increase the metabolic rate of the epidermis, thereby increasing production of materials that become part of the stratum corneum. Caution must be exercised to avoid excessive hydration and maceration.

The best occlusive agents are, by their very nature, oleaginous having a greasy texture and are difficult to spread. Most esthetic oil-in-water emulsions are preferred modes for applying occlusive agents. They are less effective, however, and rely on the aid of other formulating agents to form a film on the skin after the product's water content has evaporated.

While much effort has been directed to providing a highly effective, esthetically pleasing product none have been completely successful. The traditional approach has been to apply the occlusive product and produce the coating film in one step. The net result is that good esthetics are achieved at the expense of good occlusive films. Current products and methods of use have not been able to provide both a highly occlusive film and good esthetics in one product and method of use.

The composition and method of the present invention are directed to adding moisture to dry skin and applying a thin, long lasting medicated occlusive film that is both effective and esthetically pleasing. The essential property of the present medicated skin treating composition is that it increases stratum corneum flexibility by adding and sealing in moisture with a long lasting esthetically pleasing occlusive film and maintains the sustained presence of a medication over an extended period of time without the need of a greasy, oily coating or a protective bandage.

Such a topical composition is well suited as a vehicle for the application of topical medicaments. The most common medicaments for topical application include anesthetics, analgesics, antiinflammatories, antibiotics, hydroxy acids, antifungals, and compounds for the treatment of sun burn, dermititus, seborrheic dermititus, dandruff, psoriasis and sunscreens. Topical medicaments are added to the vehicle when moisturizing alone is insufficient to treat the diseased or damaged skin.

It has surprisingly been found that a medicated moisturizing skin care composition of the occlusive type that is long lasting and esthetically pleasing is prepared by forming an oil phase containing an oil and a dissolved surface active agent and an aqueous phase containing a dispersed thickening agent. Then admixing the two phases by slowly adding the oil phase to the aqueous phase with high shear mixing to form an oil in water emulsion then adding the medicament to the emulsion and continue mixing until a uniform mixture is formed and recovering the final product. The product of the invention has an oil content of about 30% to about 80%.

In particular, it has been found that a long lasting, esthetically pleasing, medicated, moisturizing skin care composition is produced comprising forming an oil phase by dissolving a surface active agent into an oil and heating the mixture, forming an aqueous phase by dispersing an aqueous thickening agent in water and heating the mixture, forming an emulsion by slowly adding the heated oil phase to the aqueous phase with high shear mixing while maintaining an elevated temperature then adding the medicament to the emulsion and continue mixing until a uniform mixture is formed wherein addition of the oil phase to the water phase is at a slow uniform rate such that a physically stable emulsion is formed and recovering the skin care composition.

A physically stable emulsion will not separate into layers on standing. The oil phase is formed with sufficient heating to facilitate mixing and dissolving the surface active agent in the oil. The aqueous phase is formed with sufficient heating to facilitate mixing and dispersing the aqueous thickening agent. The emulsion is formed with sufficient heating to facilitate mixing.

More particularly, it has been found that a long lasting, esthetically pleasing, medicated, moisturizing skin care composition is produced comprising forming an oil phase by dissolving a surface active agent into an oil and heating to about 60 °C to about 80 °C, forming an aqueous phase by dispersing an aqueous thickening agent in water and heating to about 60 °C to about 80 °C, forming an emulsion by slowly adding the oil phase to the aqueous phase with high shear mixing while maintaining a temperature of about 60 °C to about 80 °C then adding the medicament to the emulsion and continue mixing until a uniform mixture is formed wherein addition of the oil phase to the water phase is at a uniform rate over a period of at least about 10 minutes, perferably about 10 minutes to about 30 minutes; and recovering the skin care composition.

When an aqueous thickening agent is used which required neutralization, the procedure must contain the following process step after formation of the emulsion and before recovery of the product; neutralizing the emulsion by adding with moderate mixing an effective amount of a neutralizing agent to the emulsion such that a pH of about 4.5 to about 8.2 preferably about 5.8 to about 6.8 is attained while maintaining a temperature of about 60 °C to about 80 °C.

The medicated skin care composition of the present invention comprises (1) an oil phase comprising oil from about 30% to about 80% and a non-ionic surface active agent having an HLB number of about 7 to about 12, wherein the non-ionic surface active agent is present in an amount of about 5% to about 9%; (2) an aqueous phase comprising an aqueous thickening agent from about 0.05% to about 5% and water from about 15% to about 65%, and (3) an effective amount of a medicament, all percents are by weight of the final composition.

The method of treating skin of the present invention comprises applying to said skin an effective amount of a medicated skin care composition comprising (1) an oil phase comprising oil from about 30% to about 80% and a non-ionic surface active agent having an HLB number of about 7 to about 12, wherein the non-ionic surface active agent is present in an amount of about 5% to about 9%; (2) an aqueous phase comprising an aqueous thickening agent from about 0.05% to about 5% and water from about 15% to about 65% an effective amount of a topical medicament and washing the treated skin with water to remove excess skin care composition of leaving the skin with a medicated coating having a smooth velvety feel, and an effective amount of a medicament, all percents are by weight of the medicated skin care composition. The medicated skin care composition may optionally contain a neutralizing agent.

The medicated skin care composition of the present invention provides an oil in water emulsion having high oil content from about 30% to about 80%. Compositions having such high oil content are generally physically unstable and "greasy" or "oily". The present inventive composition is physically stable. In addition, the present invention when applied to the skin produces an "oily" coating. Surprisingly the "oily" coating is readily washed off with water leaving the skin coated with a smooth "velvety", "non-oily" film of oil containing a medicament. The residual medicated oil film is resistant to further washing and remains on the skin for about 8 hours.

While the invention is not to be limited to theoretical considerations, it is believed that incorporation of the thickening agent into the aqueous phase physically stabilizes the emulsion providing for a long shelf life and a pharmaceutically acceptable appearance. It is further believed, that incorporation of a non-ionic

surface active agent having an HLB number between about 7 to about 12 provides the oil in water emulsion with special properties. Emulsions of the present invention are high in oil content yet water washable. In addition, these emulsions leave a long lasting velvety feeling layer of oil containing medicament on the skin. The surfactant functions to aid emulsion formation and impart a water compatible property to the oil allowing an oil film to adhere to the skin surface after washing with water.

The oil phase of the present invention comprises an oil and a non-ionic surface active agent. Oil acts as an occlusive agent. The oils useful in the present invention are varied and may be of animal, vegetable or mineral origin. Method of producing oils are known and not a subject of the present invention. Animal oils are derived from the organs and tissues of animals and may be collected through extraction, heating and/or expressing processes. Vegetable oils are usually derived from the seeds of various plants and are generally produced by extraction or pressing processes. Mineral oils are derived from petroleum and are recovered through various refining processes. Throughout the specification and claims, the term "oil" shall be defined as any oil of animal, vegetable, synthetic or mineral origin in liquid form.

The oils useful in the present invention may be food grade edible oils or nonedible oils. For example, food grade oils would be particularly useful in edible pharmaceuticals and food products. Nonedible and edible oils would be useful in topical pharmaceuticals, cosmetics, personal care products and in lubricants.

Illustrative, nonlimiting examples of oils useful in the present invention include animal oils such as lanolin and the like, fatty acid esters and the marine oils: fish oil, whale oil, fish liver oil, seal oil, squalane and the like; vegetable oils such as castor oil, linseed oil, sunflower oil, soybean oil, olive oil, peanut oil, rapeseed oil, corn oil, safflower seed oil, cottonseed oil, coconut oil, palm oil, palm kernel oil, sweet almond oil, calophyllum oil, avacado oil, cerial germ oil, purcellin oil, and the like; mineral oils such as white mineral oil, parafin oil, petroleum jelly oil, petrolatum and the like. Synthetic oils such as silicone oils, dimethyl-polysiloxane, cyclic silicones, methylphenylpolysiloxane, silicone-glycol copolymer and the like. Any of the oils may be used individually or in mixtures. The preferred oil is mineral oil.

Oil is present from about 30% to about 80%, preferably from about 55% to about 75% and most preferably from about 65% to about 75% by weight of the skin care composition. The preferred oil is mineral oil. Preferably, the mineral oil will have a viscosity of about 6.0 cps to about 85.0 cps.

An oil content of less than about 30% results in a composition that is too liquid, the emulsion being physically unstable. A composition with an oil content of more than about 80% does not form a stable emulsion.

A surface active agent, more commonly known as a surfactant, as used herein is an organic compound consisting of two parts: a hydrophobic portion, and a hydrophilic portion which renders the compound sufficiently soluble or dispersible in water or another polar solvent. The combined hydrophobic and hydrophilic portions render the compound surface-active and thus able to concentrate at the interface between a surface active agent oil solution and another phase such as an aqueous phase.

There are three types of surface active agents:

(A) non-ionic, which do not dissociate, but commonly derive their hydrophilic portion from polyhydroxy or polyethoxy structures; such as polyethylene oxides, polyoxyethylene fatty acid esters;

(B) anionic, where the hydrophilic portion of the molecule carries a negative charge: such as sodium lauryl sulfate, and linear alkyl sulfates, and

(C) cationic, where the hydrophilic portion of the molecule carries a positive charge: such as cetyl pryidinium chloride.

Nonionic surface active agents are preferred in the present invention. Nonlimiting illustrative nonionic surfactants include:

Alkanolamides

Fatty acid alkanolamides

$RCONHCH_2CH_2OH$ (ethanolamides)

Fatty acid dialkanolamides

$RCON(CH_2CH_2OH)_2$

Polyethyleneglycol derivitives

Alkyl polyglycol ethers

$R(OCH_2CH_2)_nOH$

Alkyl aryl polyglycol ethers

$RC_6H_4(OCH_2CH_2)_nOH$

Polyglycol esters

$$RCO(OCH_2CH_2)_nOH$$

Thioethers

$$RS(CH_2CH_2O)_nH$$

Poly thyleneimin d rivitives

Alkylpolyethyleneimine

$$R(NHCH_2CH_2)_nNH_2$$

Polyethyleneimine amides

$$RCONH(CH_2CH_2NH)_nH$$

wherein **n** is a whole number and **R** is a hydrophobic chain of about 12 to about 18 carbon atoms

Alkylated aryl polyether alcohol,

Polyethylene glycol tert-dodecyl thioether,

Fatty acid amide condensate,

Aromatic polyglycol ether condensate,

Secondary amide of lauric acid,

Fatty acid alkanomine condensate,

Sorbitan monolaurate,

Sorbitan monolauratepoloxyethylene derivative,

Sorbitan monooleate,

Sorbitan monooleate polyoxyethylene derivative, and

Another class of non-ionic surface active agents useful in this invention are ethoxylated hydrogenated castor oils. Such surfactants are prepared by hydrogenating castor oil and treating the so-formed product with from about 10 to 200 moles of ethylene glycol. They are designated as PEG (numeral) hydrogenated castor oil in accordance with the dictionary of the Cosmetics, Toiletries and Fragrance Association, 3rd Ed. wherein the numeral following PEG indicates the degree of ethoxylation, i.e. the number of moles of ethylene oxide added. Suitable PEG hydrogenated castor oils include PEG 16, 20, 25, 30, 40, 50, 60, 80, 100 and 200.

The preferred non-ionic surface active agents are polyoxyethylene fatty acid esters such as polyoxyethylene (2) stearyl ether (POE (2) stearylether), POE (2) oleyl ether, PPG (5) ceteth 20, POE (50) stearate, POE(20) stearyl ether, and the like.

It is critical that the non-ionic surface active agent or mixture of non-ionic surface active agents have a hydrophilic - lipophilic balance number (HLB) of about 7 to about 12, preferably about 8 to about 11. The HLB is an important property of the non-ionic surface active agent since it determines the type of emulsion the surfactant tends to produce i.e. oil in water or water in oil.

A surface active agent with an HLB number less than about 7 will not form an emulsion in the present system. While a surface active agent with an HLB number greater than about 12 will form a product that does not leave an oily fraction on the skin after working as the product will not bind to the skin.

A surface active agent that is lipophilic in character is assigned to a low HLB number while a surface active agent that is hydrophilic is assigned a high number. A mixture of surface active agents will have an HLB number equivalent to a weighted average of the individual HLB numbers. For example, a surface active agent mixture of 1 part A, 2 parts B and 2 parts C, where the HLB number for A = 5, B = 15, and C = 9 would be:

$$HLB_{mix} = 1/5 \times 5 + 2/5 \times 15 + 2/5 \times 9 = 9.6$$

The HLB value of non-ionic surface active agents are well known in the art. A typical list of HLB values for common surface active agents is found in Cosmetics Science and Technology, second edition, Vol. 3, Balsam and Sagarin, Editors, Interscience Publishers, New York, 1974 pages 583 to 597, the entire contents of which are hereby incorporated by reference.

The surface agent of the present invention may be single or a mixture. The amount of surface active agent in the present invention is about 5% to about 9%, preferable about 6% to about 8%. A surface active agent concentration greater than about 9% will produce a very hydrophilic composition which will not spread properly having a plastic flow instead of a thixotropic flow. Surface active agent content of less than about 5% will not hold an emulsion over time or at elevated temperatures and phase separation will occur. Freezing and thawing will also cause phase separation when the surface active agent content is less than

about 5%.

The aqueous phase of the present invention comprises water and an aqueous thickening agent. Suitable thickening agents can comprise natural and synthetic gum, mixtures of gum, gelling agents and the like. Representative illustration include:

Natural gums: alginates, carrageenan, xanthan gum, gelatin, guar, gum arabic, carob, tragacanth, locust bean gum, karaya, pectin, agar, and

Synthetics: cellulose ethers and esters, methylcellulose, sodium carboxymethylcellulose, carboxymethylcellulose, hydroxypropylcellulose, carbomers and carbopol

Colloidal hydrated aluminum silicate: bentonite

Synthetic hectorite: laponite

Colloidal silica: aerosil

and the like.

The aqueous thickening agent is present from about 0.05% to about 5% preferably about 0.1% to about 3% and most preferably about 0.1% to about 1%. When the thickening agent is present in an amount of less than about 0.05% the emulsion is physically unstable. At amounts greater than about 5% the aqueous phase will become too thick and an emulsion will not form. The thickening agents of the present invention may swell or gel on contact with water causing the viscosity to increase by adding structure to the aqueous phase. Alternatively, the thickening agent may be of the type requiring neutralization with a basic composition to cause increased structure and viscosity in the aqueous phase.

Examples of direct thickening agents include natural and synthetic gums, gels and cellulose derivitives. Typical thickening agents requiring neutralization include carbomers and carbopols.

When thickening agents requiring neutralizing agents are used, the neutralizing agent is added after the emulsion formed with moderate stirring while maintaining a temperature of about 60 degrees C to about 80 degrees C.

Mixing is continued until the emulsion is uniform generally about 5 to about 10 minutes.

Neutralizing agents useful in the present invention include aqueous soluble basic materials. Illustrative nonlimiting examples include basic alkali metal salts and alkaline earth metal salts such as hydroxides and carbonates and basic amine compounds such as triethanolamine, isopropylamine and the like. The ratio of thickening agent to neutralizing is about 1:4 to about 1:10. The pH of the emulsion after neutralization is about 4.5 to about 8.2. The preferred pH range is about 5.8 to about 6.8.

Water is present in an amount of about 15% to about 65%, preferably from about 20% to about 40% and most preferably from about 25% to about 35%.

The medicaments useful in the present invention may be selected from a wide range of compounds. The medicaments must be suitable for topical application. Suitable medicaments include but are not limited to anesthetics, analgesics, antiinflammatories, antiobiotics, hydroxyl acids, antifungals, and compounds for the treatment of sun burn, dermititus, seborrheic dermititus, dandruff and psoriasis. Sunscreen agents may also be incorporated into the medicated skin care composition. The amount of medicament will vary according to the condition being treated and the efficacy of the individual medicaments. The medicaments may be employed individually and in mixtures. An effective amount of medicament for the condition being treated is added to the composition.

Topical anesthetics are effective for relieving pain associated with skin conditions. Topical anesthetics useful in the present invention include but are not limited to butamben, benzocaine, tetracaine, diperodon, dibucaine, lidocaine, diphenhydramine, methapyriline, tripelennamine, dimethisoquin, dyclonine, chloroprocaine, cocaine, mepivacaine, piperocaine, prilocaine, tetracaine, pramoxine and their salts. A preferred salt is the hydrochloride. These anesthetics may be used individually or in mixtures. The preferred anesthetics are pramoxine and pramoxine hydrochloride.

The medicated care composition will contain an effective amount of the anesthetic to relieve pain of the skin. Anesthetics are present in an amount from about 0.05% to about 10%, preferably about 0.1% to about 5%.

The present invention may further include ingredients such as colorants, preservatives, antioxidants, additional medicaments, moisturizers, sunscreen agents, germicides, deodorants, antiperspirants, healing agents, solvents, humectants, thickeners for the oily phase, emollients, buffers, fragrances, flavors and abrasives. These ingredients are generally added after the emulsion is formed.

The present invention is further illustrated by the following examples. All parts and percentages in the examples and throughout the specification and claims are by weight of the final composition unless otherwise indicated.

EXAMPLE 1

(Inventive Run A and Comparative Run 1)

This Example demonstrates the effect of rate of addition of the oil phase to the aqueous phase on formation of the skin care composition.

Formula Ingredients	A (% w/w)	1 (% w/w)
Deionized Water	20.15	20.15
Methyl paraben	0.20	0.20
Propyl paraben	0.10	0.10
Imidazolidinyl Urea	0.30	0.30
Carbomer 940	0.15	0.15
Triethanolamine 98%	1.50	1.50
POE (2) Stearyl Ether	3.00	3.00
Mineral Oil	70.00	70.00
PPG-5-ceteth-20	0.10	0.10
POE (20) Stearyl Ether	4.00	4.00
Fragrance	0.50	0.50
TOTAL	100.00	100.00
HLB Number	10.7	10.7

Procedure: the water phase was prepared by adding the methylparaben, propylparaben and imidazolidinyl urea (preservative) and carbomer 940 (thickener) to the water with mixing to disperse and then raising the water temperature to about 75 to 80 degrees C. with continued mixing.

The oil phase was prepared by adding the surface active agents PPG-5-CETETH-20, POE(2) stearyl ether and POE (20) stearyl ether to the oil with mixing then raising the temperature to about 75 to 80 degrees C.

The emulsion is then formed by adding the oil phase to the water phase and mixing at high shear.

In the inventive Run A, the oil phase is added to the water phase about about 5ml/minute equal to about 15 minutes. For comparative Run 1, the oil phase is added to the water phase at about 15ml/minute equal to about 5 minutes.

The neutralizing agent is then added to the emulsion with mixing continuing until the product is uniform.

Run A forms a smooth creamy emulsion that is physically stable. The product is acceptable.

Run 1 forms a physically unstable product. Oil separates from the emulsion, the product of defloculates and is unacceptable.

EXAMPLE 2

(Comparative Runs 2 and 3)

This Example demonstrates the effect of surface active agents having an HLB number less than 7 and greater than 12. The compositions of this example are prepared by the process of Example 1 Run A. Run 2 has an HLB number of 16.2. Run 3 has an HLB number of 5.1.

Formula Ingredients	2 (% w/w)	3 (% w/w)
Deionized water	20.15	20.15
Methyl paraben	0.20	0.20
Proply paraben	0.10	0.10
Imidazolidinyl Urea	0.30	0.30
Carboxyvinyl Polymer 940	0.15	0.15
Triethanolamine 98%	1.50	1.50
POE (2) Stearyl ether	3.00	-
POE (50) Stearate	-	3.00
Mineral Oil	70.00	70.00
PPG-5-ceteth-20	0.10	0.10
POE (2) Oleylether	4.00	-
POE (20) Stearyl ether	-	4.00
Fragrance	0.50	0.50
Total	100.00	100.00
HLB Number	16.2	5.1

Both Runs 2 and 3 produce products that are physically unstable. The oil separates out of the emulsion.

Calculation of HLB		% of Total Surface Active Agent	HLB Number	Fractional HLB
Run 3	POE (2) Stearyl ether	42.3	5.0	2.1
	POE (2) Oleyl ether	56.3	4.9	2.8
	PPG (5) Ceteth 20	1.4	15.0	0.2
	Run 3 Total HLB Number			5.1
Run 2				
	POE (50) Stearate	42.3	17.9	7.6
	POE (20) Stearyl ether	56.3	15.0	8.4
	PPG (5) Ceteth 20	1.4	15.0	0.2
	Run 2 Total HLB Number			16.2

EXAMPLE 3

(Inventive Runs B and C)

This Example demonstrates the effect of oil content on the emulsion. The compositions of this Example are prepared by the process of Example 1 Run A.

Formula Ingredients	B (% w/w)	C (% w/w)
Deionized Water	15.00	60.15
Methyl paraben	0.20	0.20
Propyl paraben	0.10	0.10
Imidazolidinyl Urea	0.30	0.30
Carboxyvinyl Polymer 940	0.15	0.15
Triethanolamine 98%	1.50	1.50
POE (2) Stearyl Ether	3.00	3.00
Mineral Oil	75.15	30.00
PPG-5-ceteth-20	0.10	0.10
POE (20) Stearyl Ether	4.00	4.00
Fragrance	0.50	0.50
	100.00	100.00
HLB Number	10.7	10.7

Run B product is stringy and pituitive, emulsion is acceptable but marginal.
Run C product is a thin liquid, emulsion is acceptable but marginal.

EXAMPLE 4

(Inventive Run D)

The Example demonstrates a medicated skin care composition of the present invention containing an anesthetic agent. The composition of this Example is prepared by the process of Example 1 Run A. The anesthetic, pramoxine hydrochloride was admixed into the emulsion until a uniform mixture was formed.

Formula Ingredients	D (%w/w)
Pramoxine Hydrochloride	1.05
Deionized Water	20.50
Methyl paraben	0.20
Propyl paraben	0.10
Imidazolidinyl Urea	0.30
Carbomer 940	0.15
Sodium Hydroxide (10% w/w)	.10
POE (2) Stearyl Ether	3.00
Mineral Oil	70.00
PPG-5-ceteth-20	0.10
POE (20) Stearyl Ether	4.00
Fragrance	0.50
TOTAL	100.00
HLB Number	10.7

Run D forms a smooth creamy emulsion that is physically stable. The product is acceptable.

The product of Run D was found to have an anesthetic effect on human skin when applied and then washed off with water.

The product of Example 1 Run A was found to have no anesthetic effect on human skin when applied and then washed off with water.

Claims

1. A medicated skin care composition comprising an oil in water emulsion, the composition comprising (1) an oil phase comprising oil from about 55% to about 75% and a non-ionic surface active agent having an HLB number of about 7 to about 12, wherein the non-ionic surface active agent is present in an amount of about 5% to about 9%;
(2) an aqueous phase comprising an aqueous thickening agent from about 0.05% to about 5% and

water from about 20% to about 40% and
(3) an effective amount of a medicament,
wherein the medicament is not a corticosteroid and the oil phase is added to the aqueous phase to form an emulsion.

2. A skin care composition comprising an oil in water emulsion, the composition comprising (1) an oil phase comprising oil from about 55% to about 75% and a non-ionic surface active agent having an HLB number of about 7 to about 12, wherein the non-ionic surface active agent is present in an amount of about 5% to about 9%;
(2) an aqueous phase comprising an aqueous thickening agent from about 0.05% to about 5% and an effective amount of a neutralizing agent, and water from about 20% to about 40%;
(3) an effective amount of a medicament;
wherein the medicament is not a corticosteroid and the oil phase is added to the aqueous phase to form an emulsion.

3. The composition of Claims 1 or 2 wherein the oil is selected from the group consisting of animal oils, vegetable oils, mineral oils, synthetic oils and mixtures thereof.

4. The composition of Claims 1 or 2 wherein the oil is an animal oil selected from the group consisting of lanolin, fatty acid esters, fish oil, whale, oil, fish liver oil, seal oil, squalane and mixtures thereof.

5. The composition of Claims 1 or 2 wherein the oil is a vegetable oil selected from the group consisting of castor oil, linseed oil, sunflower oil, soybean oil, olive oil, peanut oil, rapeseed oil, corn oil, safflower seed oil, cottonseed oil, coconut oil, palm oil, palm kernel oil, sweet almond oil, calophyllum oil, avacado oil, cerial germ oil, purcellin oil, and mixtures thereof.

6. The composition of Claims 1 or 2 wherein the oil is a mineral oil preferably selected from the group consisting of white mineral oil, parafin oil, petroleum jelly oil, petrolatum and mixtures thereof.

7. The composition of Claims 1 or 2 wherein the oil is a synthetic oil selected from the group consisting of silicone oils, dimethylpolysiloxane, cyclic silicones, methylphenylpolysiloxane, silicone-glycol copolymer and mixtures thereof.

8. The composition according to anyone of the Claims 1 to 7 wherein the non-ionic surface active agent is selected from the group consisting of alkanolamides, polyoxyethylenes, polyoxyethylene fatty acid esters, polyethyleneglycol derivatives, polyethyleneimine derivatives, ethoxylated hydrogenated castor oils.

9. The composition according to anyone of the Claims 1 to 7 wherein the non-ionic surface active agent is selected from the group consisting of polyoxyethylene (2) stearyl ether, POE (2) oleyl ether, PPG (5) ceteth 20, POE (50) stearate, POE (20) stearyl ether and mixtures thereof.

10. The composition according to anyone of the Claims 1 to 9 wherein the aqueous thickening agent is selected from the group consisting of natural gums, synthetic gums, gelling agents and mixtures thereof.

11. The composition according to anyone of the Claims 1 to 9 wherein the aqueous thickening agent is a natural gum selected from the group consisting of alginates, carrageenan, xanthan gum, gelatin, guar, gum arabic, carob, tragacanth, locust bean gum, karaya, pectin, agar, and mixtures thereof.

12. The composition according to anyone of the Claims 1 to 9 wherein the aqueous thickening agent is a synthetic selected from the group consisting of cellulose ethers and esters, methylcellulose, sodium carboxymethyl cellulose, carboxymethylcellulose, hydroxypropylcellulose, carbomers and carbopol and mixtures thereof.

13. The composition according to anyone of the Claims 1 to 9 wherein the aqueous thickening agent is selected from the group consisting of Colloidal hydrated aluminum silicate, bentonite, synthetic hectorite, laponite, colloidal silica and mixtures thereof.

14. The composition of Claim 2 wherein the neutralizing agent is selected from the group consisting of basic alkali metal salts, basic alkaline earth metal salts, basic amine compounds and mixtures thereof.

15. The composition of Claim 2 wherein the neutralizing agent is selected from the group consisting of alkali metal and alkaline earth metal hydroxides and carbonates, triethanol amine isopropylamine and mixtures thereof.

16. The composition according to anyone of the Claims 1 to 15 wherein the medicament is an anesthetic selected from the group consisting of butamben, benzocaine, tetracaine, diperodon, dibucaine, lidocaine, diphenhydramine, methapyriline, tripelennamine,dimethisoquin, dyclonine, chloroprocaine, cocaine, mepivacaine, peperocaine, prilocaine, tetracaine, pramoxine their salts and mixtures thereof.

17. The composition according to anyone of the Claims 1 to 15 wherein the medicament is pramoxine hydrochloride.

18. A method for preparing a skin car composition as claimed in anyone of the Claims 1 and 3 to 17 comprising

forming an oil phase by dissolving a surface active agent into an oil and heating to facilitate solution,

forming an aqueous phase by dispersing an aqueous thickening agent in water and heating to facilitate dispersing, forming an emulsion by slowly adding in from 10 - 30 minutes the oil phase to the aqueous phase with high shear mixing while maintaining an elevated temperature of 60 °C to 80 °C and admixing an effective amount of medicament,

wherein the medicament is not a corticosteroid and addition of the oil phase to the water phase is at a slow uniform rate such that a stable emulsion is formed; and recovering the skin care composition.

19. A method for preparing a skin care composition as claimed in anyone of the compositions 2 to 17 comprising forming an oil phase by dissolving a surface active agent into an oil and heating to facilitate solution,

forming an aqueous phase by dispersing an aqueous thickening agent requiring a neutralizing agent in water and heating to facilitate dispersing, forming an emulsion by slowly adding in from 10 to 30 minutes the oil phase to the aqueous phase with high shear mixing while maintaining an elevated temperature of 60 °C to 80 °C admixing an

effective amount of a medicament, wherein the medicament is not a corticosteroid and addition of the oil phase to the water phase is at a slow uniform rate such that a stable emulsion is formed,

neutralizing the emulsion by adding an effective amount of a neutralizing agent, and recovering the skin care composition.

Patentansprüche

1. Medizinisches Hautpflegemittel in Form einer Öl-in-Wasser-Emulsion, umfassend (1) eine Ölphase mit etwa 55 % bis etwa 75 % eines Öls und etwa 5 % bis etwa 9 % eines nicht-ionischen oberflächenaktiven Mittels einer HLB-Zahl von etwa 7 bis etwa 12, (2) eine wäßrige Phase mit etwa 0,05 % bis etwa 5 % eines wäßrigen Dickungsmittels und etwa 20 % bis etwa 40 % Wasser und (3) eine wirksame Menge eines Nicht-Corticosteroid-Arzneimittels, wobei die Ölphase der wäßrigen Phase zur Bildung einer Emulsion zugesetzt ist.

2. Medizinisches Hautpflegemittel in Form einer Öl-in-Wasser-Emulsion, umfassend (1) eine Ölphase mit etwa 55 % bis etwa 75 % eines Öls und etwa 5 % bis etwa 9 % eines nicht-ionischen oberflächenaktiven Mittels einer HLB-Zahl von etwa 7 bis etwa 12, (2) eine wäßrige Phase mit etwa 0,05 % bis etwa 5 % eines wäßrigen Dickungsmittels, einer wirksamen Menge eines Neutralisationsmittels und etwa 20 % bis etwa 40 % Wasser und (3) eine wirksame Menge eines Nicht-Corticosteroid-Arzneimittels, wobei die Ölphase der wäßrigen Phase zur Bildung einer Emulsion zugesetzt ist.

3. Mittel nach Ansprüchen 1 oder 2, wobei das Öl aus der Gruppe tierische Öle, pflanzliche Öl, Mineralöle, synthetische Öle und Mischungen derselben ausgewählt ist.

4. Mittel nach Ansprüchen 1 oder 2, wobei das Öl aus einem tierischen Öl aus der Gruppe Lanolin, Fettsäureester, Fischöl, Walöl, Fischleberöl, Robbenöl, Squalan und Mischungen derselben ausgewählt ist.

5. Mittel nach Ansprüchen 1 oder 2, wobei das Öl aus einem pflanzlichen Öl aus der Gruppe Rizinusöl, Leinsaatöl, Sonnenblumenöl, Sojabohnenöl, Olivenöl, Erdnußöl, Rapssaatöl, Maisöl, Saflorsaatöl, Baumwollsaatöl, Kokusnußöl, Palmöl, Palmkernöl, Süßmandelöl, Calophyllumöl, Avocadoöl, Getreidekeimöl, Purcellinöl und Mischungen hiervon ausgewählt ist.

6. Mittel nach Ansprüchen 1 oder 2, wobei das Öl aus einem Mineralöl, vorzugsweise aus der Gruppe weißes Mineralöl, Paraffinöl, Erdölgallertöl, Vaseline und Mischungen hiervon, ausgewählt ist.

7. Mittel nach Ansprüchen 1 oder 2, wobei das Öl aus einem synthetischen Öl aus der Gruppe Silikonöle, Dimethylpolysiloxan, cyclische Silikone, Methylphenylpolysiloxan, Silicon/Glykol-Mischpolymere und Mischungen hiervon ausgewählt ist.

8. Mittel nach einem der Ansprüche 1 bis 7, wobei das nicht-ionische oberflächenaktive Mittel aus der Gruppe Alkanolamide, Polyoxyethylene, Polyoxyethylenfettsäureester, Polyethylenglykolderivate, Polyethyleniminderivate und ethoxylierte hydrierte Rizinusöle ausgewählt ist.

9. Mittel nach einem der Ansprüche 1 bis 7, wobei das nicht-ionische oberflächenaktive Mittel aus der Gruppe Polyoxyethylen (2) Stearylether, POE (2) Oleylether, PPG (5) Ceteth 20, POE (50) Stearat, POE (20) Stearylether und Mischungen hiervon ausgewählt ist.

10. Mittel nach einem der Ansprüche 1 bis 9, wobei das wäßrige Dickungsmittel aus der Gruppe natürliche Gummis, synthetische Gummis, Geliermittel und Mischungen hiervon ausgewählt ist.

11. Mittel nach einem der Ansprüche 1 bis 9, wobei das wäßrige Dickungsmittel aus einem natürlichen Gummi aus der Gruppe Alginate, Carrageenan, Xanthangummi, Gelatine, Guar, Gummiarabikum, Carob, Traganth, Johannisbrotgummi, Karaya, Pektin, Agar und Mischungen hiervon ausgewählt ist.

12. Mittel nach einem der Ansprüche 1 bis 9, wobei das wäßrige Dickungsmittel aus einem synthetischen Dickungsmittel aus der Gruppe Celluloseether und -ester, Methylcellulose, Natriumcarboxymethylcellulose, Carboxymethylcellulose, Hydroxypropylcellulose, Carbomere und Carbopol und Mischungen hiervon ausgewählt ist.

13. Mittel nach einem der Ansprüche 1 bis 9, wobei das wäßrige Dickungsmittel aus der Gruppe kolloidales hydratisiertes Aluminiumsilikat, Bentonit, synthetischer Hectorit, Laponit, kolloidales Siliziumdioxid und Mischungen hiervon ausgewählt ist.

14. Mittel nach Anspruch 2, wobei das Neutralisationsmittel aus der Gruppe basische Alkalimetallsalze, basische Erdalkalimetallsalze, basische Aminverbindungen und Mischungen hiervon ausgewählt ist.

15. Mittel nach Anspruch 2, wobei das Neutralisationsmittel aus der Gruppe Alkalimetall- und Erdalkalimetallhydroxide und -carbonate, Triethanolamin, Isopropylamin und Mischungen hiervon ausgewählt ist.

16. Mittel nach einem der Ansprüche 1 bis 15, wobei das Arzneimittel ein Anästhetikum aus der Gruppe Butamben, Benzocain, Tetracain, Diperodon, Dibucain, Lidocain, Diphenhydramin, Methapyrilin, Tripelennamin, Dimethisoquin, Dyclonin, Chlorprocain, Cocain, Mepivacain, Peperocain, Prilocain, Tetracain, Pramoxin, deren Salze und Mischungen ausgewählt ist.

17. Mittel nach einem der Ansprüche 1 bis 15, wobei das Arzneimittel Pramoxin-Hydrochlorid ist.

18. Verfahren zur Zubereitung eines Hautpflegemittels nach einem der Ansprüche 1 und 3 bis 17 durch

Ausbilden einer Ölphase durch Auflösen eines oberflächenaktiven Mittels in einem Öl und Erwärmen zur leichteren Lösungsbildung;

Ausbilden einer wäßrigen Phase durch Dispergieren eines wäßrigen Dickungsmittels in Wasser und Erwärmen zum erleichterten Dispergieren;

Ausbilden einer Emulsion durch langsames Zugeben innerhalb von 10 bis 30 min der Ölphase zu der wäßrigen Phase unter Mischbedingungen hoher Scherkraft und unter Aufrechterhalten einer erhöhten Temperatur von 60 °C bis 80 °C und Zumischen einer wirksamen Menge eines Nicht-Corticosteroid-Arzneimittels,

wobei die Zugabe der Ölphase zu der Wasserphase mit einer derart langsamen gleichmäßigen Geschwindigkeit erfolgt, daß eine stabile Emulsion gebildet wird, und

Gewinnen des Hautpflegemittels.

19. Verfahren zur Zubereitung des Hautpflegemittels nach einem der Ansprüche 2 bis 17 durch

Ausbilden einer Ölphase durch Auflösen eines oberflächenaktiven Mittels in einem Öl und Erwärmen zur erleichterten Lösungsbildung;

Ausbilden einer wäßrigen Phase durch Dispergieren eines ein Neutralisationsmittel erfordernden wäßrigen Dickungsmittels in Wasser und Erwärmen zum leichteren Dispergieren;

Ausbilden einer Emulsion durch langsame Zugabe in 10 bis 30 min der Ölphase zu der wäßrigen Phase unter Mischbedingungen hoher Scherkraft und unter Aufrechterhalten einer erhöhten Temperatur von 60 °C bis 80 °C und Zumischen einer wirksamen Menge eines Nicht-Corticosteroid-Arzneimittels, wobei die Zugabe der Ölphase zu der wäßrigen Phase mit einer derart langsamen gleichförmigen Geschwindigkeit erfolgt, daß eine stabile Emulsion gebildet wird,

Neutralisieren der Emulsion durch Zusatz einer wirksamen Menge eines Neutralisationsmittels und

Gewinnen des Hautpflegemittels.

Revendications

1. Une composition médicamenteuse de soin de la peau comprenant une émulsion huile-dans-l'eau, la composition contenant:

(1) une phase huileuse comprenant de l'huile en une proportion d'environ 55% à environ 75% et un agent tensioactif non ionique dont l'indice HLB est compris entre 7 et environ 12, l'agent tensioactif non ionique étant présent en une proportion d'environ 5 à environ 9%;

(2) une phase aqueuse comprenant un agent épaississant aqueux en une proportion d'environ 0,05% à environ 5%, et de l'eau en une proportion d'environ 20 à environ 40%; et

(3) une proportion efficace d'un médicament, composition dans laquelle le médicament n'est pas un corticostéroïde et la phase huileuse est ajoutée à la phase aqueuse pour former une émulsion.

2. Une composition de soins de la peau contenant une émulsion eau-dans-huile, la composition comprenant:

(1) une phase huileuse comprenant de l'huile en une proportion d'environ 55% à environ 75% et un agent tensioactif non ionique dont l'indice HLB est compris entre 7 et environ 12, l'agent tensioactif non ionique étant présent en une proportion d'environ 5 à environ 9%;

(2) une phase aqueuse comprenant un agent épaississant aqueux en une proportion d'environ 0,05% à environ 5%, et une proportion efficace d'un agent de neutralisation, et de l'eau en une proportion d'environ 20% à environ 40%;

(3) une proportion efficace d'un médicament; composition dans laquelle le médicament n'est pas un corticostéroïde et la phase huileuse est ajoutée à la phase aqueuse pour former une émulsion.

3. La composition selon la revendication 1 ou 2, caractérisée en ce que l'huile est choisie dans le groupe constitué par les huiles animales, huiles végétales, huiles minérales, huiles synthétiques et leurs mélanges.

4. La composition selon la revendication 1 ou 2, caractérisée en ce que l'huile est une huile animale choisie dans le groupe constitué par lanoline, ester d'acide gras, huile de poisson, huile de baleine, huile de foie de poisson, huile de phoque, squalame et leur mélange.

5. La composition selon la revendication 1 ou 2, caractérisée en ce que l'huile est une huile végétale choisie dans le groupe formé par huile de ricin, huile de lin, huile de tournesol, huile de soja, huile d'olive, huile d'arachide, huile de colza, huile de sais, huile de graines de safran, huile de graines de coton, huile de noix de coco, huile de palme, huile de noyaux de palme, huile d'amandes douces, huile de calophyllum, huile d'avocat, huile de germes de céréales, huile de purcelline et leurs mélanges.

6. La composition selon la revendication 1 ou 2, caractérisée en ce que l'huile est une huile minérale choisie de préférence dans le groupe constitué par une huile minérale blanche, huile de paraffine, huile de gelée de pétrole, pétrolat et leurs mélanges.

7. La composition selon la revendication 1 ou 2, caractérisée en ce que l'huile est une huile synthétique choisie dans le groupe constitué par huile de silicone, diméthylpolysiloxane, silicones cycliques, méthylphénylpolysiloxane, silicone-glycolcopolymère et leurs mélanges.

8. La composition selon l'une quelconque des revendications 1 à 7, caractérisée en ce que l'agent tensioactif non ionique est choisi dans le groupe constitué par des alcanolamides, polyoxyéthylènes, polyoxyéthylènes esters d'acides gras, dérivés de polyéthylèneglycol, dérivés de polyéthylèneimine et huiles de castor hydrogénées éthoxylées.

9. La composition selon l'une quelconque des revendications 1 à 7, caractérisée en ce que l'agent tensioactif non ionique est choisi dans le groupe formé par le polyoxyéthylène (2) stéaryléther, POE (2) oléyléther, PPG (5) céteth 20, POE (50) stéarate, POE (20) stéaryléther et leurs mélanges.

10. La composition selon l'une quelconque des revendications 1 à 9, caractérisée en ce que l'agent épaississant aqueux est choisi dans le groupe formé par les gommes naturelles, les gommes synthétiques, les agents gélifiants et leurs mélanges.

11. La composition selon l'une quelconque des revendications 1 à 9, caractérisée en ce que l'agent épaississant aqueux est une gomme naturelle choisie dans le groupe formée par alginate, caragénate, gomme de xanthane, gélatine, gomme de guar, gomme arabique, caroube, gomme adragante, caroubier, karaya, pectine, agar-agar et leurs mélanges.

12. La composition selon l'une quelconque des revendications 1 à 9, caractérisée en ce que l'agent épaississant aqueux est un agent synthétique choisi dans le groupe formé par les éthers et esters de cellulose, méthylcellulose, sodium carboxyméthylcellulose, carboxyméthylcellulose, hydroxypropylcellulose, carbomères et carbopol et leurs mélanges.

13. La composition selon l'une quelconque des revendications 1 à 9, caractérisée en ce que l'agent épaississant aqueux est choisi dans le groupe formé par le silicate d'aluminium hydraté colloïdal, bentonite, hectorite synthétique, laponite, silice colloïdale et leurs mélanges.

14. La composition selon la revendication 2, caractérisée en ce que l'agent de neutralisation est choisi dans le groupe formé par les sels basiques de métaux alcalins, les sels basiques de métaux alcalino-terreux, les dérivés basiques d'amines et leurs mélanges.

15. La composition selon la revendication 2, caractérisée en ce que l'agent neutralisant est choisi dans le groupe formé par les hydroxydes de métaux alcalins et métaux alcalino-terreux et leurs carbonates, triéthanolamine, isopropylamine et leurs mélanges.

16. La composition selon l'une quelconque des revendications 1 à 15, caractérisée en ce que le médicament est un anesthésique choisi dans le groupe formé par butambène, benzocaïne, tétracaïne, diperodon, dibucaïne, lidocaïne, diphénydramine, méthapyriline, tripelennamine, diméthisoquiine, dyclonine, chloroprocaïne, cocaïne, mépivacaïne, piperocaïne, prilocaïne, tétracaïne, pramoxine, leurs sels et leurs mélanges.

17. La composition selon l'une quelconque des revendications 1 à 15, caractérisée en ce que le médicament est le chlorhydrate de pramoxine.

18. Un procédé de préparation d'une composition de soins de la peau selon l'une quelconque des revendications 1 et 3 à 17, consistant à:
    - former une phase huileuse par dissolution d'un agent tensioactif dans une huile et chauffage pour faciliter la solution,
    - former une phase aqueuse par dispersion d'un agent épaississant aqueux dans l'eau et chauffage pour faciliter la dispersion,

- former une émulsion par addition lente en 10 à 30 minutes de la phase huileuse à la phase aqueuse avec mélange à cisaillement élevé, tout en maintenant une température élevée de 60 à 80 • C et mélange d'une proportion efficace d'un médicament, ne consistant pas en un corticostéroïde,
- additionner la phase huileuse à la phase aqueuse à une vitesse uniforme lente de façon à ce qu'il se forme une émulsion stable, et
- récupérer la composition de soins de la peau.

19. Un procédé de préparation d'une composition de soins de la peau tel que revendiqué dans l'une quelconque des revendications 2 à 17, consistant à:

- former une phase huileuse par dissolution d'un agent tensioactif dans une huile et à chauffer pour faciliter la solution,
- former une phase aqueuse par dispersion d'un agent épaississant aqueux nécessitant un agent neutralisant dans de l'eau et chauffage pour faciliter la dispersion,
- former une émulsion par addition lente en 10 à 30 minutes de la phase huileuse à la phase aqueuse avec mélange à cisaillement élevé, tout en maintenant une température élevée de 60 à 80 • C et mélange d'une proportion efficace de médicament, ce médicament n'étant pas un corticostéroïde, et addition de la phase huileuse à la phase aqueuse se faisant à une vitesse lente et uniforme de façon à ce qu'il se forme une émulsion stable, et
- neutraliser l'émulsion par addition d'une proportion efficace d'un agent neutralisant, et
- récupérer la composition de soins de la peau.